

mesogloal laminae of the basal moieties of the polyps being distinct or only partially fused together, they are absolutely and indistinguishably fused, and the mesogloea is enormously thickened, forming a cœenchymal mass resembling that of *Alcyonium*. The mesogloea immediately surrounding the polyp cavities is devoid of cells, but elsewhere it contains numerous intrusive cells, among which spicules are developed. The intrusive cells are derivatives of the ectoderm, and in suitable preparations numerous strands of cells are seen to pass inwards from the ectoderm, between the ramifications of the superficial set of endodermic canals, which is rather more marked in this species than in *X. garciæ*. It seems probable that the greater part of the cœenchymal mesogloea is formed at the expense of the intrusive ectoderm cells, very few of which develop spicules.

These three species are interesting, firstly, as indicating the steps by which forms with a wholly mesogloal spicular skeleton, such as *Alcyonium*, may have been derived from forms with an ectodermic skeleton; and, secondly, as suggesting the mode in which the ectodermic skeleton of *Heliopora* may have been developed. In the *Xeniidæ*, as in the *Helioporidae*, the bulk of the cœenchymal mesogloea and the whole of the calcigenous elements are derived from the ectoderm. In the one case the mesogloal elements preponderate greatly over the calcigenous, in the other the preponderance of the calcigenous elements has led to the formation of a dense calcareous skeleton, the mesogloal elements being reduced to a very subordinate position.

XX. "Degenerations consequent on Experimental Lesions of the Cerebellum." By J. S. RISIEN RUSSELL, M.D., M.R.C.P., Assistant Physician to the Metropolitan Hospital. Communicated by Professor V. HORSLEY, F.R.S. Received June 4, 1894.

(From the Pathological Laboratory of University College, London.)

(Abstract.)

The paths which degenerate after ablation of one lateral lobe of the cerebellum, and after extirpation of its middle lobe, are discussed in this paper.

The former operation, viz., removal of one lateral lobe of the cerebellum, results in degeneration of all the peduncles on the side of the lesion, and in the superior peduncle of the opposite side; but no fibres degenerate in the middle or inferior peduncle of the opposite side. The degenerated fibres in the superior peduncle on the side

of the lesion decussate in the posterior quadrigeminal region, and pass to the opposite red nucleus and optic thalamus. None could be traced beyond this point. Those in the opposite superior peduncle represent fibres which degenerate in the cerebellum, passing from the seat of lesion across to the intact half of the organ, and leaving it by this peduncle. These degenerated fibres occupy a special position in the peduncle, a part of it which is comparatively free from degenerated fibres on the side of the lesion, and a part occupied by degenerated fibres on both sides, when the cerebellum is divided into two lateral halves by a mesial incision. These facts are held to controvert Marchi's statement, that none of the peduncles contain commissural fibres.

The degenerated fibres in the middle peduncle, on the side of the lesion, pass chiefly to the grey matter of the opposite side of the pons. Some degenerated fibres from this source pass between the pyramidal bundles, but there is no evidence to support Marchi's observation, that degenerated fibres also pass from this peduncle in the fillet and posterior longitudinal bundle to the corpora quadrigemina and periphery of the antero-lateral region of the spinal cord, and that some pass to the corpus striatum by way of the pyramidal tract.

Of the fibres which degenerate in the inferior peduncle, the majority occupy the lateral region of the medulla, becoming more and more scattered as they pass down. These can no longer be said to form a tract below the level of the superior pyramidal decussation; but a few scattered degenerated fibres occupy the antero-lateral region of the cervical cord, beyond which none can be traced. Degenerated fibres pass to both inferior olives from this peduncle; but no well-marked tract to the opposite inferior olive, as described by Ferrier and Turner, was found. In accordance with these observers, however, no corroboration of Marchi's results was found, in so far as he states that degenerated fibres pass from this peduncle to the ascending root of the fifth, the roots of the cranial nerves through the posterior longitudinal bundles, and the spinal nerves by the descending antero-lateral tract.

In confirmation of Marchi, and contrary to the observations of Ferrier and Turner, degenerated fibres were found in all the peduncles of the cerebellum, after extirpation of its middle lobe. Those in the superior peduncle occupy all parts of it, as seen on transverse section, they decussate in the region of the posterior corpora quadrigemina, and terminate in the opposite red nucleus, beyond which point no degenerated fibres could be traced.

The degenerated fibres in the middle peduncle behave much as do those which result from ablation of one lateral lobe of the cerebellum, and the same may be said with regard to the degenerated fibres in the inferior peduncle. No evidence was found to support Marchi's

statement that degenerated fibres from this source pass to the cranial nerve roots through the posterior longitudinal bundles, and to the antero-lateral columns of the cord by way of the fillet.

With regard to the well-marked antero-lateral tract, which Marchi describes as degenerating throughout the whole length of the spinal cord, it is held, in conjunction with Ferrier and Turner, that no such tract degenerates after lesions limited to the cerebellum. And in support of this negative view being probably the correct one, is adduced the fact that Ferrier and Turner found a similar tract after injury to Deiter's nucleus, as did Mott also, after injury to the posterior column nuclei.

XXI. "A Contribution to the Study of (i) some of the Decussating Tracts of the Mid- and Inter-brain, and (ii) of the Pyramidal System in the Mesencephalon and Bulb." By RUBERT BOYCE, M.B., Assistant Professor of Pathology in University College, London. Communicated by Professor VICTOR HORSLEY, F.R.S. Received June 9, 1894.

(From the Pathological Laboratory of University College, London.)

(Abstract.)

The present paper is supplementary to a paper communicated to the Royal Society, February, 1894, entitled a "Contribution to the Study of the Descending Degenerations in the Brain and Spinal Cord." It is based upon a study of the changes found in the brains and spinal cords of the animals (cats) used for that research.

1. It is found that hemisections of the mesencephalon through the superior quadrigeminal region is followed by degeneration of *Meynert's commissure* and *Forel's decussation*, situated in front of the third ventricle and behind the optic chiasma.

The degenerate fibres which go to form the *decussation of Forel* are large medullated fibres which ascend from the seat of injury in the tegmental region, proceed forwards and anteriorly, and then curve round in front of the third ventricle, between the latter and Meynert's commissure. They then pass backwards, between the optic tract and the internal capsule (*pes pedunculi*), and appear to end in the lateral thalamic region. This description agrees with that given by Darkschewitch and Pribytkow, who, however, state that the fibres terminate in the lenticular nucleus; by the Marchi method, on the other hand, the Author has traced the fibres past this nucleus, and across the internal capsule into the thalamus.

The fibres appear to be part of the fibres constituting the "fountain (ventral) decussation of Forel."